POLYCHLORINATED BIPHENYL NOTIFICATION AND REMEDIAL PLAN
SMUD HEADQUARTERS
6201 S STREET
SACRAMENTO, CALIFORNIA

September 28, 2016

A Report Prepared for:

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SACRAMENTO, CALIFORNIA

Kleinfelder Job No: 00138810.001A

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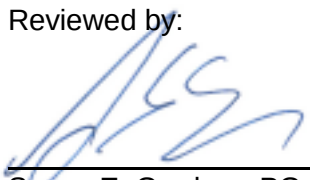

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1 INTRODUCTION

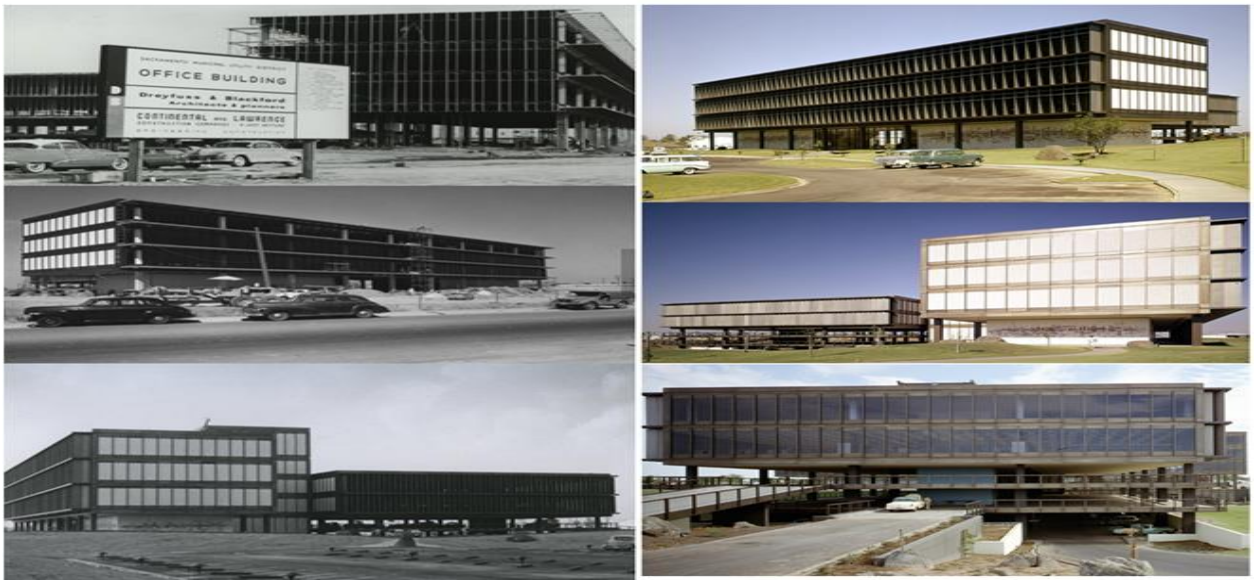
Kleinfelder was retained by the Sacramento Municipal Utility District (SMUD) to prepare a notification and remedial plan to manage polychlorinated biphenyl (PCB) remediation waste during renovations at the SMUD Headquarters building located at 6201 S Street, Sacramento, CA. The waste consists of building products and materials containing PCBs. The building has been unoccupied since December 2015 and will remain unoccupied during renovation. The renovation project will include a full interior renovation involving all interior building components and a partial renovation of exterior building components down to the building envelope.

The purpose of this document (notification and remedial plan) is to provide the United States Environmental Protection Agency (USEPA) Region 9 (EPA) Regional PCB Coordinator with an application for approval to manage PCB remediation waste in accordance with 761.61(c) (Risk-based Disposal). In addition, SMUD proposes to manage the removal and disposal of PCB bulk product waste in accordance with 761.62 (Disposal of PCB Bulk Product Waste).

The following remedial plan provides the EPA with the findings of pre-renovation inspections and sampling conducted to characterize the impact of PCBs to building materials. The air and wipe sample data indicate that there are no unacceptable risks related to inhalation or direct contact with PCBs in the unrestricted areas of the building. The plan outlines the approach and methodology for removal, storage, and disposal of the PCB containing materials. The project remedial goals for unrestricted uses shall be 0.24 parts per million (ppm) for porous surfaces and 5 ug/100cm^2 for non-porous surfaces.

2 BACKGROUND

The SMUD headquarters building is located at 6201 S Street, Sacramento, California. The six-story building (including basement) was designed by Dreyfuss & Blackford Architects. The building is 130,000-square-foot and was built between 1959 and 1960, and is listed on the National Register of Historic Places. The building is located in a mix use zone with light commercial and residential properties.



As a component of pre-renovation, a hazardous material assessment was conducted from August, 2014 through March, 2016. The assessment identified PCB containing building materials with concentrations less than and greater than 50 ppm PCB. The assessment also identified media (soils around the perimeter of the building) containing PCB's at concentrations less than 50 ppm. The assessments were conducted by Vista Environmental Consulting, Inc., of San Leandro, California, AECOM (formerly AECOM Technical Services, Inc.) of Sacramento, California, Kleinfelder of Sacramento, California, and Entek Consulting Group, Inc. of Rocklin, California.

The building materials and media identified that contain or are contaminated are: (1) sealants, (2) mastic, (3) substrates to sealants/mastics, (4) HVAC system, (5) fire proofing insulation, (6) ceiling tiles, (7) soil, and (8) storm water.

3 WASTE CHARACTERICATION AND REMEIDAL ACTION

3.1 PCB REMEDIATION WASTE

The following building materials and media have been characterized as PCB Remediation Waste as defined in 40CFR_761.3. PCB Remediation Waste shall be containerized and stored on site not greater than 180 days in accordance with 40CFR_761.65(c)(9) and disposed in accordance with 40CFR_761.61(a)(5)(i)(B)(2).

- **Heating, Ventilation, and Air Conditioning (HVAC) Building Interior** – Analytical results indicate that the HVAC system throughout the building (Air register, air plenum, ducting, insulation) contains PCBs greater than 50 ppm ranging in concentrations from 63 mg/kg to 14,000 mg/kg. All porous and non-porous HVAC components shall be characterized and disposed of as PCB remediation waste >50 ppm.

Perimeter Soils – Analytical results indicate that the soils located along the perimeter of the building (east and west side of the building south wing, east and west side of the building core, and front of south wing) are impacted with PCBs ≤29 ppm. Clean-up site characterization has been conducted in accordance with 761.61(a) (2) by using a sampling grid with intervals of 3 meters from each sample point. The delineation of impacted soils to none detects range from 3, 13, 23, and 33 feet from the buildings drip line at a depth of 3 to 6 inches. The analytical results for the detected Aroclor (PCB 1260) range from 0.0084 to 29 mg/kg. The analytical data is a composition of 192 locations around the exterior of the headquarters building, including the parking structure. All impacted soils exceeding the remedial goal of 0.24 shall be excavated to the depth and width of non-detect. Confirmation sampling shall be performed in accordance with 761.61(a)(6) to confirm all impacted soils have been removed. Appendix C outlines the soil characterization sample grid and samples exceeding 0.24 ppm that will be tested to confirm clean up levels.

Sample grid delineation of soils exceeding RSL:

- PCBs were detected above the RSL in 12 composite samples and one duplicate sample (shown on Figure 2 with tan shading) at a depth of 0-3 inches at concentrations ranging from 0.56 mg/kg in sample 6201-S60,62,64,66-3 to 17 mg/kg in sample 6201-S67,68,69,70-3.

- PCBs were detected above the RSL in 7 discrete "R" samples (discrete samples collected from composite sampling locations surrounding the Headquarters Building) at a depth of 0-3 inches at concentrations ranging from 0.33 mg/kg in sample R-84 to 1.3 mg/kg in sample R-118 (Figure 2).

- PCBs were detected at or above the RSL in 31 discrete "S" samples at a depth of 0-3 inches at concentrations ranging from 0.24 mg/kg in sample S-134-3 to 16 mg/kg in sample S-175-3 ("S" samples shaded in green shown on Figure 2).

- PCBs were detected above the RSL in 8 discrete "S" samples at a depth of 3-6 inches at concentrations ranging from 0.41 mg/kg in sample S-179-6 to 11 mg/kg in sample S-178-6 ("S" samples shaded in purple are shown on Figure 2).

- PCBs were detected at or above the RSL in each of the 4 "M" samples (around the maple tree on the east side of the headquarters building) collected at 0-3 inches at concentrations ranging from 0.62 mg/kg in sample M-E-3 to 14 mg/kg in sample M-W-3.

- PCBs were detected at or above the RSL in 2 "M" samples (around the maple tree on the east side of the headquarters building) collected at 3-6 inches at concentrations ranging from 0.35 mg/kg in sample M-N-6 to 0.75 mg/kg in sample M-W-6.

- **Storm water** – Analytical results indicate that storm water collected from seven storm drains within the area of soils impacted with PCBs detect PCBs in the range of 0.13 parts per billion (ppb) to 2.3 ppb. PCB's in three of the drain inlets on the east side of the building core and north east side of the building south wing exceeds (0.5 ppb) the decontamination standards for water outlined in 40CFR_761.79 (b) (iii) for unrestricted use. The offsite drainage from the storm drains discharge to navigable waters (Sacramento River). All samples indicate results less than 3 ppb which is in accordance with decontamination standards outlined in 40CFR) 761.79(b) (ii) for water discharged to a treatment works or to navigable waters. To remove the impacted water in the storm drains, the sediments and waters will be flushed from the furthest impacted drain inlet up to the man hole the three drain inlets tie in to. The man hole will be plugged and sediments and water shall be pumped from the man hole. Completion of the flush will be determined by a visual inspection indicating a clean turbidity. Samples shall be taken upon completion for confirmation. Waters and sediments removed for the drainage system shall be characterized in accordance to 40_761.61 PCB remediation waste, concentrations at which the PCBs are found and disposed of at a TSCA approved incinerator.

- ***Concrete Aggregate Panels and Metal Framing*** – Sealants in the vertical seams of the concrete aggregate panels located on the exterior walls on all wings contain PCBs in concentrations ranging from 3,600 mg/kg to 26,000 mg/kg (Aroclor 1260). Concrete panels on the east and west side of the building core will be removed along with PCB containing sealants and disposed of as PCB remediation waste. Concrete panels located on the east and west side of the building south wing, north and south side of the building core shall remain in place in accordance to the Conceptual Site Model (CSM), Human Health and Ecological Risk Assessment (Appendix G). Panels on the east and west side of the building core shall be characterized and disposed of as PCB remediation waste >50 ppm.

3.2 PCB BULK PRODUCT

The following building materials have been characterized as PCB Bulk Product as defined in 40CFR_761.3. PCB Bulk Products shall be containerized and stored onsite not greater than 180 days in accordance with 40CFR_761.65(c) (9) and disposed of in accordance with 40CFR_761.62.

- ***Sealants in the seams of the exterior concrete walkways*** – Analytical results indicate that the sealants between the seams of the concrete walkways on all wings contain PCBs at concentrations ranging from 590 mg/kg to 31,000 mg/kg. Analytical results indicate a non-detect of PCBs 6-inches from sealant seams. The sealants and concrete within 6-inches of the sealants shall be characterized as PCB Bulk Product > 50 ppm. The remainder of the concrete shall be characterized as non-hazardous and disposed of in accordance with local, state, and federal laws.

- ***Sealants in the seams of windows, parking garage guard rails, aluminum spandrel panels on the face of the building exterior, and walkway / mural base*** – Analytical results indicate that sealants contain PCBs (Aroclor 1260) ranging in concentrations from 8,100 mg/kg to 41,000 mg/kg. All sealants shall be characterized as PCB bulk product waste >50 ppm and disposed of in accordance with 40_CFR_761.62. Window glass with no sealants adhered to it shall be containerized, stored, and disposed of as non-hazardous waste in accordance with local, state, and federal regulations. Upon the completion of the removal of sealants, porous substrates shall be decontaminated in accordance to 40CFR_761.79. Upon completion of the cleaning, wipes samples shall be collected as defined in 40CFR_761.123 and a NACE visual inspection performed in accordance

40CFR_761.79(b)(3). The remedial goal for the non-porous surfaces shall be 5 ug/100cm^2 or less.

- ***Subfloor Concrete (Building Interior)*** – Analytical results of a yellow and black floor mastic indicate PCB concentrations in the range of 5.9 to 8,400 PPM (Aroclor 1242, 1248, 1254, and 1260). The presence of PCBs in the floor mastic warranted additional testing to substrates. Analytical testing was performed on the carpet tiles and the concrete in accordance with 40CFR_761.61(a)(2) to delineate contamination. Analytical results of the carpet tiles indicate PCB contamination in the range of less than 1.9 to 120 PPM (Aroclor 1242). Analytical results of the bare concrete indicate PCB concentrations in the range of 5.2 to 48 PPM (Aroclor 1242, 1248). Because of PCB contamination to the bare concrete floor a pilot study was conducted to determine the effectiveness of PCB removal to a remedial goal of 0.24 ppm or less.

  The pilot study was designed and conducted in accordance with 40CFR_761-Subpart N and Subpart O and 40CFR_761.79. Five 10-foot by 10-foot center grid flooring areas were selected for the pilot. The pilot was conducted in five phases: (1) remove all flooring to the mastic, (2) remove the mastic with Sentinel formula 909 biodegradable mastic remover, (3) collect bulk sample, (4) decontaminate floor in accordance with 40CFR_761.79 by using two PCB clean agents (Capsur C/S and Less Than Ten), and (5) take bulk confirmation samples.

  The pilot study results indicate that the cleaning/decontamination of the bare concrete prove not to be effective in reducing the PCB contamination to a remedial goal of 0.24 ppm. Post analytical results indicate PCB contamination in the range of .20 to 33 ppm. Due to the ineffectiveness of the pilot all flooring material (mastic, carpet, vinyl tiles, mastic remover) removed shall be managed as PCB bulk product ≥ 50 ppm. Upon completion of the removal and cleaning of the flooring system throughout the building, the flooring shall be then encapsulated with two solvent resistant and water repellent coatings of contrasting colors. The proposed sealant is Sikagard 62. Upon completion of encapsulating the floor PCB marks shall be placed (ML) in locations where it is visible. The floor will then be monitored in accordance with the O&M plan for PCBs left in place (Appendix F).

3.3 CONTINGENCY PLAN

In the event PCB contamination or PCB contaminated bulk product are identified out beyond the assessments performed, work shall stop in those areas and consultation with the EPA shall take place prior to moving forward.

4 ONSITE WASTE MANAGEMENT

- Containers used for the storage of liquid or non-liquid PCB waste shall be in accordance with 40CFR_761.65(c)(6) and the requirements set forth in the DOT Hazardous Materials Regulations (HMR) at 49 CFR parts 171 through 180. Onsite storage of containers containing PCB waste shall be stored on site not greater than 180 days in accordance with 40CFR761.65(c)(9 Containers shall be labeled in accordance with 40CFR_761.40(a)(1). The labels will clearly show the date the waste was generated and placed in to the containers. Containers shall be stored within the project boundaries.

- Spill containment measures will be utilized throughout the remedial project by utilizing visqueen sheeting, and negative air pressure machines.

- Spent HEPA filters, PPE, dust, debris, and waste generated during the removal of PCB containing materials and impacted adjacent substrates will be disposed of as PCB remediation waste in accordance with 40CFR_761.61(a)(5)(v).

- During removal activities, measures will be taken to prevent exposure to and releases of PCBs. This includes the use of dust suppression methods to minimize airborne dust generated during removal activities as necessary.

- Security, project site will entail 24-hour security patrol and onsite cameras.

5 TRANSPORTATION

All PCB waste will be transported by companies with the following registrations; California hazardous waste transporter, USDOT Number, in accordance with 40 CFR 761, Subpart K – PCB Waste Disposal Records and Reports, and 49 CFR Subtitle B – Other Regulations Relating to Transportation.

6 OFF SITE DISPOSAL

All PCB waste will be disposed of in accordance with PCB regulations outlined in 40 CFR 761 – Subpart D – Storage and Disposal.

Record-keeping will comply with 40 CFR 761.180; and all applicable requirements in Subpart K such as manifesting of the PCB wastes and Notification of PCB Activity by the transporter of the PCB waste. Listed below are the proposed disposal facilities and the concentrations of PCBs that can be accepted:

All facilities used for the disposal of TSCA regulated PCB waste shall have a current Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA) permit. Below is a nonexclusive list of facilities in EPA Region 9. Additional PCB disposal facilities that may be used can be found on the EPA web site at the following link (https://www.epa.gov/pcbs/disposal-and-storage-polychlorinated-biphenyl-pcb-waste).

List of Polychlorinated Biphenyl (PCB) Disposal Approvals by EPA Region

The following table shows disposal approvals issued under the Toxic Substances Control Act (TSCA) to accept and/or dispose of PCB waste. These facilities are either permitted by EPA to dispose of PCB waste or may handle or dispose of certain types of PCB waste outside of a permit in accordance with the regulations outlined in 40 Code of Federal Regulations 761. The table is organized by EPA Region. Use the regional headings located on the right-side of the table to locate the disposal approval closest to you.

EPA Region 9

Company	Address	Phone Number	Technology Type
Superior Special Services	5736 West Jefferson Phoenix, AZ 85043	(800) 368-9095	fluorescent lighting ballast recycling
Chemical Waste Management	35251 Old Skyline Road Kettleman City, CA 93239	(559) 386-9711	Chemical waste landfills
Terra-Kleen Response Group, Inc.	3970-B Sorrento Valley Blvd. San Diego, CA 92130	(619) 558-8762	Physical separation
California Pipe Recycling (CPR)	5303 Rosedale Hwy Bakersfield, CA 93308	(714) 349-7473	Pipeline & compressor systems decontamination
US Ecology, Inc.	PO Box 578 Beatty, NV 89003	(800) 239-3943	Chemical waste landfills

Region 1
Region 2
Region 3
Region 4
Region 5
Region 6
Region 7
Region 8
Region 9
Region 10
Multi Region

MATERIALS LEDGER

Media	Location	Initial Sampling Results (August 2015)			Action(s)
		Reference Report	Reference Page(s)	Concentrations (mg/kg)	
Exterior Building Components					
Type 01 – Black Sealant	Windows: North and South Wings	Vista, 2015	2, 6, Table 1	8,100 to 41,000	Remove and Dispose
Type 02 – Black Sealant	Concrete Panels: All Wings (North, South and Core)	Vista, 2015	2, 6, Table 1	3,600 to 26,000	Remove and Dispose. Risk assessment will determine if panels can stay.
	Concrete Panels: South Wing (East & West Sides of wing)	Vista, 2015	2, 6, Table 1	3,600 to 26,000	Panels to remain. Risk assessment will determine associated risk
Type 03 – Brown Sealant	Windows: South Wing – 2nd Floor, South. This material appears to be applied over Type 01 sealant.	Vista, 2015	2, 7, Table 1	12,000	Remove and Dispose.
Type 04 – Black Hard Sealant	Corner Flashings, Horizontal Flashings, Mullions, and Railings: All Wings	Vista, 2015	2, 7, Table 1	1,800	Remove and Dispose with New Sealant. Clean Adjoining Structures
Type 05 – Gray "Thiokol" Sealant	Walkway Concrete Expansion Joints: South Wing	Vista, 2015	2, 7, Table 1	1,100	Remove and Dispose
Type 08 – Black Soft sealant	Walkway Column Bases and Mural Base	Vista, 2015	3, 7, Table 1	48,000	Remove and Replace with New Sealant. Clean Adjoining Structures
Type 10 – Black Hard Sealant	Front Entrance Walkway Outside of Building Footprint: South Wing, South Side	Vista, 2015	3, 7, Table 1	31,000	Remove and Dispose
Type 11 – Gray Soft Sealant	Walkway Concrete Expansion Joints: South Wing	Vista, 2015	3, 7, Table 1	590	Remove and Replace with New Sealant
Soil	All Wings	Vista, 2015	2, 3, 4, 9, 10, Table 3	51 to 240	Remove to lateral and vertical extent
Interior Building Components					
Yellow Floor Mastic	Under and Adhered to 12" Vinyl Floor Tile: All Wings	Vista, 2015	3, 7, 10, Table 2	4,700 to 8,400	Remove Mastic and Clean Concrete
Sludge	Oil Cloth System Basin and Pipes: Penthouse Coil Room	Vista, 2015	2, 3, 7, 10, Table 2	67 to 300	Remove and Dispose
Supply Air Register Insulation	Supply Air Registers : North and South Wings	Vista, 2015	3, 7, 8, 10, Table 2	81 to 14,000	Remove and Dispose
Duct Insulation	All Wings, Ceiling Plenum	Vista, 2015	2, 3, 9, Table 3	63	Remove and Dispose
Brown Cloth Wire Insulation	All Wings	Vista, 2015	2, 3, 9, 10, Table 3	270	Remove and Dispose

Vista: Vista Environmental Consulting, Inc.
mg/kg: milligrams per kilogram

7 REFERENCES

The following references are a list of all applicable federal laws that govern the management of PCBs.

Title 40 → Chapter I → Subchapter R → Part 761

Title 40: Protection of Environment

PART 761—POLYCHLORINATED BIPHENYLS (PCBs) MANUFACTURING, PROCESSING, DISTRIBUTION IN COMMERCE, AND USE PROHIBITIONS

§761.3 Definitions.

§761.30 Authorizations.

§761.61 PCB remediation waste.

§761.62 Disposal of PCB bulk product waste.

§761.79 Decontamination standards and procedures.

Subpart N—Cleanup Site Characterization Sampling for PCB Remediation Waste in Accordance with §761.61(a)(2)

§761.265 Sampling bulk PCB remediation waste and porous surfaces.

§761.267 Sampling non-porous surfaces.

§761.269 Sampling liquid PCB remediation waste.

§761.274 Reporting PCB concentrations in samples.

Subpart O—Sampling To Verify Completion of Self-Implementing Cleanup and On-Site Disposal of Bulk PCB Remediation Waste and Porous Surfaces in Accordance With §761.61(a)(6)

§761.280 Application and scope.

§761.283 Determination of the number of samples to collect and sample collection locations.

§761.292 Chemical extraction and analysis of individual samples and composite samples.

§761.295 Reporting and recordkeeping of the PCB concentrations in samples.

§761.298 Decisions based on PCB concentration measurements resulting from sampling.

Subpart P—Sampling Non-Porous Surfaces for Measurement-Based Use, Reuse, and On-Site or Off-Site Disposal Under §761.61(a)(6) and Decontamination Under §761.79(b)(3)

8 ADDITIONAL INFORMATION

Contacts

- Sacramento Municipal Utility District (SMUD), Derrick McCarty (916) 732-5335
- Sacramento County Environmental Management (916) 875-8484
- Sacramento Metropolitan Air Quality Management District (916) 874-4800
- California Department of Toxic Substance Control (800) 728-6942
- California Environmental Protection Agency (916) 323-2514
- Environmental Protection Agency, George Randall (415) 972-3352

Appendices

- Appendix A Vista's PCB Limited Assessment Report dated July 2015
- Appendix B AECOM's PCB Evaluation Summary Report, dated July 2015
- Appendix C Kleinfelder's Analytical Report
  (Soil, concrete walkway, concrete walkway columns)
- Appendix D Verification Sampling and Analysis Plan
- Appendix E Operation and Maintenance Plan for PCBs left in place
- Appendix F Pilot Study Methodology and Findings
- Appendix G Risk Assessment for PCB's left in place
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APPENDIX A

VISTA'S PCB LIMITED ASSESSMENT REPORT DATED JULY 2015

APPENDIX B

AECOM'S PCB EVALUATION SUMMARY REPORT, DATED JULY 2015

APPENDIX C

KLEINFELDER'S ANALYTICAL REPORT

(SOIL, CONCRETE WALKWAY, CONCRETE WALKWAY COLUMNS)

APPENDIX D
VERIFICATION SAMPLING AND ANALYSIS PLAN

IN DEVELOPMENT

APPENDIX E
OPERATION AND MAINTENANCE PLAN FOR PCBS LEFT IN PLACE

IN DEVELOPMENT

APPENDIX F
PILOT STUDY METHODOLOGY AND FINDINGS

APPENDIX G
RISK ASSESSMENT FOR PCB'S LEFT IN PLACE